

Alg. 2 Warm Up #4-3

Quiz first.

Simplify, no calculator:

1. 4^{-3}

2. $125^{1/3}$

3. $(2x)^{-3}$

4. $(5x^0y^4)^3$

5. $8^{2/3}$


Change to a decimal:

6) 48%

7) 138%

8) 0.6%

HW Questions:

2) $0.05, 0.2, 0.8,$


6) $t(n) = -\frac{2}{3}n + 1$

8a) $7x - (x + 3) = 9x + 27$

$7x - x - 3 = 9x + 27$

$6x - 3 = 9x + 27$



4)

n	$t(n)$
6	16 $\rightarrow (6, 16)$
10	40 $\rightarrow (10, 40)$
15	70

$$m = \frac{40 - 16}{10 - 6} = \frac{24}{4} = 6$$

$$t(n) = 6n + b \rightarrow t(n) = 6n +$$

$$40 = 6(10) + b$$

$$\begin{array}{r} 40 \\ - 60 \\ \hline \end{array} \quad \begin{array}{r} 40 \\ - 60 \\ \hline \end{array}$$

$$b =$$

9b) $x^2 + 2x - 48 = 0$

$$(x + 8)(x - 6) = 0$$

$$x = -8, 6$$

$$1 \cdot 48$$

$$2 \cdot 24$$

$$3 \cdot 16$$

$$4 \cdot 12$$

$$6 \cdot 8$$

9c) $(7x-5)(x+3)=0$ d) $4x^2-16x=0$

$$(x+2)(x-2)=0$$

e) $(x^2-4)(x+5)=0$

f) $12x^2+15x=0$

$$3x(4x+5)=0$$

$$\begin{array}{r} x^2-4=0 \\ +4 \quad +4 \end{array}$$

$$x+5=0$$

$$\begin{array}{l} 3x=0 \\ x=0 \end{array}$$

$$\begin{array}{r} 4x+5=0 \\ -5 \quad -5 \\ \hline 4x=-5 \\ \frac{4}{4} \quad \frac{-5}{4} \end{array}$$

$$\boxed{x = \pm 2, -5}$$

$$\boxed{x = 0, -\frac{5}{4}}$$

Notes:

Exponential Growth

$$y = a(b)^x$$

$$\begin{array}{c} \uparrow \\ b > 1 \end{array}$$

When
 $x=0$, $y=a$
 y-int: $(0, a)$
 starting value
 zero term.

Exponential Decay

$$y = a(b)^x$$

$$\begin{array}{c} \uparrow \\ 0 < b < 1 \end{array}$$

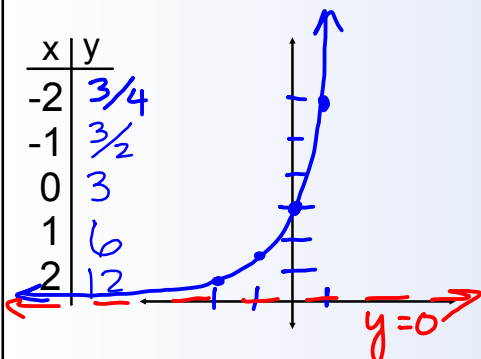
What if $b=1$?

$$y = a(1)^x$$

$y = a$
 horizontal
 line

Exponential Growth

$$y = 3(2)^x$$

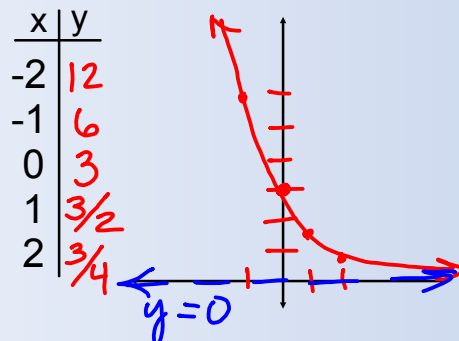


$$y = 3(2)^{-2}$$

$$= 3\left(\frac{1}{2}\right)^2$$

Exponential Decay

$$y = 3\left(\frac{1}{2}\right)^x$$



% Increase % Decrease

Ex: 96% Increase ----> $100\% + 96\% = 196\%$
Multiplier = 1.96

73% Decrease ---->

$$100\% - 73\% = 27\%$$

Situation to exponential equation:

Multiplier = 0.27

You bought a car for \$42,000. It depreciates 12% each year. Write an equation and find the value of the car after 10 years.

let t = time in years

$V(t) = 42,000(0.88)^t$

$$V(10) = 42,000(0.88)^{10}$$

$$V(10) \approx \$11,697.04$$

Exponent Rules:

$$a^m \cdot a^n = a^{m+n}$$

$$(a^m)^n = a^{mn}$$

$$a^0 = 1 \quad a \neq 0$$

$$\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$$

$$a^{1/n} = \sqrt[n]{a}$$

Example:

$$x^2 \cdot x^3 = x^5$$

$$x \cdot x \cdot x \cdot x \cdot x = x^5$$

$$8^{1/3}$$

$$\sqrt[3]{8}$$

HW: Tan Worksheet

Chapter 2 starts tomorrow
Bring your book!